No. 42. Feb. 22. 1813
No. 60

#3

Dropsy - of Brain

Dr Rush

William H Eggleston.

In

At

Inn

Sub

The

Un

For

An

3

Inaugural Dissertation
on
Hydrocephalus Internus
or
Internal Dropsy of the Brain

Submitted to the Examination
of
The Provost, Trustees and Medical Faculty
of the
University of Pennsylvania

For the Degree of Doctor of Medicine

The task

upon me, and

equal to my in

=ble of the many

liable, and liken

to whom it is a

of no little Cons

Refinements are g

Spirit of liberality

timid efforts of a

=xperienced Wr

the sympathetic fee

me to solicit it

fore you by a Ca

which I have se

lus Internus. In

The task of submitting to you a Thesis has now devolved upon me, and I have only to regret that my ability is not equal to my inclination in performing it. I am duly sensible of the many errors and imperfections to which it will be liable, and likewise of the distinguished talents of the Tribunal to whom it is addressed, but at the same time it is a source of no little consolation to reflect, that minds of Genius and refinement are generally chastened and expanded with a mild spirit of liberality, that will make every allowance due to the timid efforts of a Student, and the embarrassments of an inexperienced Writer. If circumstances like these deserve the sympathetic feelings of soft and indulgent scrutiny, permit me to solicit it in behalf of the essay which is now laid before you by a Candidate for Medical Honors. The subject which I have selected for the purpose is that of Hydrocephalus Internus. In this selection I have been perfectly an influ-

=enced by any
aspiring hope
subject than h
additional
and as I felt
innovation o
Theories, I th
fen diseases
to the Patient
Hydrocephal
of this disea
pages, and
not be fortuna
they may at

=enced by any impulse of vanity, nor have I been deluded by any aspiring hope, of either giving a more perfect developement of the subject than has hitherto been given, or of shedding any new additional light upon it. It was the first that suggested itself, and as I felt no ambition to draw your attention to schemes of innovation or to take any adventurous flight into new Theories, I thought proper to adopt it. There are perhaps very few diseases more interesting to the Physician, more distressing to the Patient and more alarming to his Friends than the Hydrocephalus Internus. But in relation to the nature of this disease, permit me to refer you to the following pages, and to conclude with a wish, that if they should not be fortunate enough to meet with your approbation, that they may at least meet with your Clemency..

Hydrocephalus Internus.

Children
of all the
is more a
Thus
generally
tells us th
Sometimes
The reason
be explai
force of t
greater a
At the sam
in the Ar
and the V
=tity of blo
bein lar
parts of
quantity
at more
=tion are
and the
on differen
It is a
and in f
in that pa
For instan
place in
they occ

Hydrocephalus Internus

Children are the subjects of this dangerous and insidious disease, and of all the calamities to which the Human Body is subject, no one is more alarming in its symptoms, or more fatal in its termination.

This Complaint attacks Children of all ages. But most generally those between two and nine years of age. Dr Rush tells us that he has seen it in a Child of six weeks old. Sometimes it affects Adults of a good habit of body.

The reason why it attacks Children more than Adults, may be explained in the following manner "The Capacity and force of the Heart in proportion to the System of Vessels, is greater at the beginning of life, than at an after period; At the same time a greater quantity of blood is contained in the Arteries, proportionably to what is contained in the Veins, and the Vessels of the Head likewise receive a greater quantity of blood in proportion to the rest of the System. The brain being larger in children in proportion to the other parts of the Body than in Adults, of course a greater quantity of blood is sent to it in Childhood, than ~~at~~ at more advanced stage. The effects of this determination are evident in the mucous discharge from the Nose, and the frequent occurrence of Sores behind the Ears and on different parts of the Body.

It is a well known fact that in every stage of Life, and in fevers of all Kinds, there is a disposition to Effusion in that part to which there is the greatest determination. For instance, in inflammatory fever, effusions take place in the Lungs and Joints. In the bilious Fever they occur in the Liver, and in the Gout in every part of the

the body". In
ternatural
occurs in
the reason
in the Erupt
worms, an

In the com
drowsy, and
and free fr
of sight pa
comes ill, the
of all the ab
gradually,
friends are
till advanci
peculiar dis
the dull
panies, per
after he has
majority of
a day, and
the evenings.
and is situa
generally in
fines to one
attend. It fre
decks to the
each alterna

the body". In all febrile diseases (says Drkush) there is a preternatural determination of blood to the brain. This occurs in a more especial manner in Children. Hence the reason why they are so apt to be affected with convulsions in the eruptive fever of the Small Pox, in the diseases from worms, and in the first paroxysms of intermitting fever.

The Symptoms of the Disease.

In the commencement the Patient is peevish, inactive drowsy, and slightly feverish, but at intervals Cheerful and free from complaint. He then begins to complain of slight pains in the Head, or belly, the complexion becomes ill, the appetite weak with considerable disorder of all the abdominal functions. These complaints arise gradually, but are seldom alarming; and the Childs friends are not awakened to a sense of his danger untill advancing a step farther the commencement of a peculiar disease has more distinctly shewn itself.

The dulness and pains in the head are now accompanied, perhaps upon getting up in the mornings, or after he has begun to stir about with Nausea, and in a Majority of Cases a vomiting occurs once or twice a day, and the skin is observed to be hot and dry towards the evenings. The Pain in the head now becomes more acute, and is situated chiefly in the fore-part, or if not there, generally in the Crown of the Head. Sometimes it is confined to one side. The Head generally inclines to the side affected. It frequently continues down the nape of the Neck to the Shoulders. We not unfrequently find the Head-Ach alternating with the affection of the Stomack; the vo-

=vomiting bei
and Vice Ve
In this state o
to the light,
sleep he gri
and starts a
=tion to these
is dilated a
turned in tow
more dilated
axis directe
=pil are la
healthy person
the Mead Ac
then makes
miserable
With the gree
that of the
patient had

The He
the Counte
of which
In breat
very esp
and vom
In the m
Stools are

are very

vomiting being less troublesome when the pain is most violent and Vice Versa.

In this state of the ~~xxxxxxx~~ disease the Patient has an aversion to the light, cries much, sleeps little, and when he does sleep he grinds his Teeth, picks his nose, appears to be uneasy and starts often, screaming as if he were terrifies. In addition to these a Strabismus takes place, the Pupil of the eye is dilated and the axis of one eye is generally found to be turned in towards the Nose. The Pupil on this side is rather more dilated than on the other and when both have the axis directed inwards (which sometimes happens) both pupils are larger than they are observed to be in the eyes of healthy persons. The vomiting now becomes more constant, the Head Ache more excruciating; Every Symptom of fever then makes its appearance, so that the situation of the miserable Patient fills the minds of the Spectators with the greatest horror. A delirium frequently occurs and that of the most violent kind (says Duin) particularly if the Patient has arrived at the age of puberty.

The Heat is generally excessive about the Head, and the Countenance is greatly flushed about the Evening at which time the Fever increases.

In breathing there is considerable pause after every expiration. The tongue is clean, white and sometimes it acquires an aphthous redness. In the majority of Cases the bowels are costive, Stools are procured with difficulty, and when obtained are very offensive. And sometimes a Diarrhea takes place.

Physic
Why C a
Pothrg
in he
tells us,
slowness
most o
full, I
the di
to the p
soon rely
and bec
be fum
given, o
the aise
remitten
Dr Rus
is great
pupil,
He als
tite was
disease,
an en
addition
trained
a girl a
who com
her he a
tionsh
devi ti

Physicians greatly disagree in regard to the State of the Pulse. Whytt and some others say, that it is quick in the beginning. Fothergill and Watson declare that it is no quicker than in health. Some assert that it is slow; while Dr Rush tells us, he has seen a Case, in which no preternatural slowness or intermission was ever perceived. But in most of the cases related by him, the pulse was found full, tense, slow, and intermitting in the beginning of the disease. As Dr Rush has paid as much attention to the pulse as most Physicians, or perhaps more I would as soon rely upon his judgement as that of any other person, and believe that in a majority of cases the pulse will be found as above related. The symptoms which have been given, occasionally occur though none of them accompany the disease in an invariable manner. Like the Bilious remitting ~~Fever~~ Yellow Fever it assumes a Variety of shapes.

Dr Rush that great Observer, to whom the medical world is greatly indebted, has not found the dilated and insensible pupil, the delirium or strabismus, to attend at all times.

He also tells us, that he has seen a Case in which the appetite was unimpaired from the first to the last stage of the disease, and likewise that he met with an other in which an uncommon acuteness in hearing took place. In addition to these, Dr Rush relates a case in which he obtained a gill of water from the Ventricles of the brain of a girl of nine years of age who died of this disease, and who complained in no stage of it either of a pain in her head or limbs, or of a Sick Stomack. The last mentioned Cases are sufficient to shew that there are many deviations from the History of the Disease ~~which~~ which has

been given
-pily expres
the appe
We generall
on the surfa
gorged with
seem inflam
sometimes
the thickenin
-rid vessels
Crust has b
that observe
-mation".
Dura mate
most freque
The quant
pear as al
eight oun
have relat
of limpid
than from
the gentle
not always
shewn som
no effusio
-mation.
different st
the inspect
the Intes
-tricted p

been given, and that it is indeed as Dr Quin has happily expressed it of a truly "protie form nature".

The appearances on dissection after death.

We generally find within the Cranium the veins particularly on the surface of the brain and lining of the ventricles, gorged with dark blood, the membranes in some places seem inflamed and covered with coagulable lymph, sometimes considerable adhesions take place between the thickening of the membranes and minute and florid vessels upon the Pia Mater. "An inflammatory Crust has been found on the optic nerves, as thick as that observed on the Intestines in a state of inflammation". We find Water between the Cranium and Dura Mater, or between the Dura and Pia Mater, but most frequently in the Ventricles of the brain.

The quantity contained in these cavities is sometimes so great as almost to exceed belief. Whytt has found eight ounces, Monroe three pounds, and some have related where they have obtained several quarts of limpid Water. But we seldom meet with more than from two to six, or eight ounces of fluid within the Ventricles. "Both inflammation and effusion do not always attend in this disease, for dissections have shewn some cases of inflammation with little or no effusion, and some of effusion without inflammation. This variety may have been produced by the different stages of the disease in which death and the inspection of the brain took place". In the abdomen, the Intestines have been found inflamed and constricted from spasm, and the surface of the Liver

of a bro
the sere
of the b
larger
Meser
their in

It mig
this dis
it appear
depend
as cha
of their
=have u
brain
=ture of
vomiting
with the
hand f
some
amnes
=peed
difficu
=tition,
so new
for-mi
no cer
=tinguis
Centr

of a bright red colour and sometimes adhering to the peritoneum. In some cases we find the surface of the liver covered with small white tubercles not larger than a grain of mustard. The glands of the mesentery are often diseased as is evinced by their enlargement.

Of the Diagnosis

It might be of some consequence to distinguish this disease from some others resembling it, though it appears from what has been said that we can depend upon no symptom which can be considered as characteric. Infants cannot give an account of their sensations and therefore we are more uncertain untill the symptoms of oppressed brain appear. We may however dread the nature of the disease when the Infant has a fever, vomiting, with costiveness or diarrhea, lies oppressed with the eyes shut, dislikes the light, puts the hand frequently to the Head as if going to rub something off, has starting and spasms and awakes suddenly as if terrified. It must be confessed that the Diagnosis of this disease is very difficult, for in disorders of the bowels from dentition and other causes symptoms may occur somewhat similar to those which appear in the forming state of Hydrocephalus. As we have no certain characteristic by which we can distinguish this disease we should like faithful centinels be continually upon our guard and

always
thirds of
terminat
whenever
with an a
always su
=dies will
which the
until the
we have s

It is pr
always be
to the sud
from the S
=tions of the
=ducing co
Effusion. T
=terminating
Consumption
on the brai
System. T
it appears
been observ
The Colic,
=solation, so
From the
=ease, ma
inflammat
tense the a
to light ar
upon
=vessel are
appearan
relaxed a

always suspect the approach of the Enemy. As two thirds of the diseases which afflict the Human Race terminate in effusion in some part of the body; I would whenever there was a severe Head-Ache accompanied with an affection of the Stomach, slow or irregular pulse, always suspect a dropsy of the Brain. The same remedies will generally be serviceable in complaints with which this disease may be confounded, and if we delay untill the last stage to obtain a more certain Diagnosis, we have scarcely any hope of doing good

The Causes of Hydrocephalus

It is produced by causes, the operation of which cannot always be detected, but most frequently it can be traced to the sudden removal of an eruption, or cutaneous discharge from the Scalp. Falls or bruises upon the Head, certain positions of the body, and childish plays, these act directly by inducing congestion or inflammation and afterwards an effusion. It is also produced by a variety of diseases, as intermitting, continual and eruptive fevers, by the pulmonary consumption, rheumatism and worms. They appear to act on the brain indirectly through the medium of the whole System. From the dissections of Lieutaud, Quin and others it appears further, that the Internal Dropsy of the brain has been observed to succeed each of the following diseases, viz: The Colic, Palsy, melancholy, dysentery, dentition, insolation, scrophula, and the sudden healing of old sores.

From the facts enumerated it is evident that the disease may be considered as arising altogether from an inflammation of the brain. The Pulse which is full and tense, the delirium, difficulty of breathing and the aversion to light are all symptoms of inflammatory diseases.

Upon opening the cranium after death, the blood-vessels are found turgid with blood, and there is every appearance of inflammation of the brain. Dr Quin has related a case directly in point. The head of a Patient

was open'd
lus, and no
all tings
fected them
be properly
=tom of this
The Ter
the disease
cable in this
Wales
disease, and
been detected
in every case
latter stage
which Dr Rus
is probable th
future time
=sician is to
Pulse, and
not by the na
name of a
Mankind as
arrived at the
most importa

We need
remedy, than
of many cas
observations"
=medes in cu
to be mention
mention that
others. But it
every man th
the laws of a
prescription by

was open'd who died with every symptom of a Hydrocephalus, and no water was found in the Ventricles, the vessels were all turged with blood, and no Anatomist could have inspected them more nicely. This case cannot I acknowledge be properly called a dropsy of the brain, altho' every symptom of this complaint was present.

The Term Hydrocephalus (or effusion of water) whence the disease has derived its name, does not appear to be applicable in this (the first stage of the disease) as the effusion of water ~~[illegible]~~ is evidently the effect of the disease, and not its Cause. In some cases no effusion has been detected, as was stated before, and it is probable that in every case, the effusion does not take place but in the latter stage of the disease. Phrenicula, an appellation which Dr Rush has given would be more proper, and it is probable that this term will be generally adopted at a future time: tho' it should be remember'd that a Physician is to be governed by the Symptoms, such as the Pulse, and also by the general State of the System and not by the name of the disease. Prescribing for the mere name of a disease has made as much havoc among Mankind as the Yellow Fever or the Plague. We are now arrived at the last part of our subject, and that of the most importance which is, The Method of Cure.

Blood Letting

We need no other proof of the beneficial effect of this remedy, than that of Dr Rush, who has given the history of many cases in the 2d Vol: of "Medical Inquiries and Observations" where the use of the Lancet compleatly succeeded in curing this disease together with other remedies to be mentioned. In addition to his authority, I might mention that of Monroe, Quin, Patterson, and many others. But it matters not who has recommended it, as every man that has any pretensions to a knowledge of the laws of Animal economy must be governed in his prescription by such symptoms as either indicate deple-

depletion or
state of the s
=matory acte
The necessity
vious, and
answer a d
congestion,
and some o
general bleed
=rifying. W
vein, or tem
procure suf
=ficient ~~be~~ very
obtaining
have recou
general an
appearance
marks of in
or symptom
tions may
pulse and
quantity of
different st
governed
System.

I ha
patients w
plentiful a
When symp
of the brain
determina
They wil

depletion or other remedies. Should the pulse and general state of the System be mark'd by an encreased or inflam=
=matory action we must by all means recommend bleeding. The necessity of blood letting in such cases seems very ob=
=vious, and it ought to be carried to such an extent as to answer a determinate end; Viz; that of lessening topical congestion, and diminishing arterial action. Dr Quin and some others seem to prefer local evacuations, to general bleeding, by means of leeches, cupping or sca=
=rifying. When the patient is very young, the jugular vein, or temporal artery may be open'd, when we can not procure sufficient quantity by other means. If the pa=
=tient be very young we meet with some difficulty in obtaining blood from the arm; in this case we must have recourse to local depletion. The repetition of both general and topical bleeding should depend on the appearance the disease exhibits; and as long as any marks of inflammatory action in the Vessels of the brain or symptoms of local congestion remain, these opera=
=tions may be repeated from time to time, untill the pulse and inflammatory action has subsided. The quantity of blood to be taken must be different, in the different stages of the disease. We are therefore to be governed by the pulse and the general state of the System.

Of Cathartics

I have constantly observed says Dr Rush, all the patients whose cases have been related, to be relieved by plentiful and repeated evacuations from the bowels. When symptoms of inflammatory action in the vessels of the brain are present, purgatives by lessening the determination to the head, necessarily do good. They will likewise be proper when there is foulness

of the bowels
clay colour
should be
have his b
-vel as a
any thing
because sh
blood woul
some a div
and others
Gamboge.
agreable to
and to be g
should prefe
be given ev

In every st
what it ma
physicians
up a drain
of the brain
from the Ves
stimulatin
-for be used
the Neck, T
And we
means of th
Vivicatore

This r
some w
Dobson, sp
Hydrocepha

of the bowels, indicated by the Stools being either fetid & clay coloured, or dark and Slimy. Great attention should be paid to the bowels. Our Patient should never have his bowels costive. Dr Quin advises us to use Calo=mel as a purge, and cautions us against adding any thing to it, which is likely to produce a vomiting, because should a vomiting take place, the flow of blood would be encreased in the Vessels of the head. Some advise Jalap, in combination with Calomel, and others again advise the Chrystals of Tartar with Gamboge. The dose of the purge should be regulated agreable to the age, and constitution, of the patient, and to be given as often as occasion may require. I should prefer Calomel and Jalap myself, and it should be given every day or two as occasion may require.

Of Blisters.

In every stage of the disease, and let the cause have been what it may, blisters appear to be highly adviseable by all physicians. They produce their good effects by keeping up a drain, and taking off the plethora from the Vessels of the brain. The great discharge which they occasion from the Vessels of the head greatly overbalances their Stimulating effects on the whole System. They may there=fore be used in every stage. They may be applied on the Neck, Temples, behind the Ears, or all over the head. And we may keep it continually running by means of the Unguentum Sabinæ or Unguentum Vesicatorium.

Of Mercury.

This remedy has been highly recommended by some Writers on this disease. Drs. Percival and Dobson, spoke so much in praise of mercury in Hydrocephalus as almost to lead many to believe it a Specific

From the es
-ced to plac
sial gogu
spoke of its
observations
no reliance
cure of the
authority w
remedy is
objected to,
and also its
and above
tender jar
Dr Rush as
years of a
therefore to
of this dis
Cathartics
to promise
Mercury
-curial ac

The a

The hea
cloths dipp
ice alone
The cloth
warm and
application
applied, a
the Eschar

As these

from the experience of other Physicians we are now induced to place no confidence in mercury when used as a sialagogue. Dr Barton in his Lectures on mercury spoke of its having been used in this disease, but from his observations and experience, I am induced to believe that no reliance can be placed on it as a sialagogue in the cure of the disease now under consideration. From the high authority mentioned, I think it may be asserted, that this remedy is unsafe in the cure of this disease. It may be objected to, on account of the uncertainty of its operation, and also its inefficacy: if it excites a mercurial action, and above all, its tendency to produce gangrene in the tender jaws of infants. It should never be used says Dr Rush as a sialagogue in patients under nine or ten years of age, for the above mentioned reasons. We are therefore to place no reliance on mercury in the cure of this disease: But depend principally, on blood-letting Cathartics and Blisters in the first stage. These seem to promise a much fairer chance for success, than mercury used so as to excite, what is called a Mercurial action in the System

The application of Cold to the Head.

The head should be previously shaved and linen cloths dipped in Vinegar and Water, or ice and water, or ice alone may be kept constantly applied to the head. The cloth should be renewed as often as it becomes warm and dry. This remedy may be used before the application of the blister, or after the blister has been applied, a rag wetted as before; may be applied to the Forehead to allevate the pain.

Of Setons & Issues.

As these remedies have been used with advantage

in cases o
analogy, to
preventive,
predisposite
or chronic
and that th
shown espe

The Patien
dark room,
of every kin

Some thin
that opiates
doses when
bears some
most celebra
=nelis I wou
in the disc

Ste
I should
act of sneez
=modification of
an absorpt
=duced to be
=gravate the
=lief. For as
detrimental
to recommen

This has
=viate a mor

in Cases of Epilepsy and Apoplexy, reasoning from analogy, some have supposed they might be tried as a preventive, where it is likely to arise from an hereditary predisposition. Patterson supposes, that in a lingering or chronic case there may be room for their application, and that they may be introduced as prophylactics with strong expectations of advantage.

Of Rest.

The Patient should be kept as quiet as possible in a dark room, free from the stimulus of light, and noise of every kind should be avoided if possible

Opium.

Some think favorably of this remedy, while others say, that Opiates are absolutely necessary in large and repeated doses when the pains are very acute. As Hydrocephalus bears some relation to Phrenetis, and as according to the most celebrated writers, Opium is improper in the Phrenetis, I would administer it with the greatest caution in the disease under consideration.

Sternutatories

I should suppose the shock given to the head in the act of sneezing, would in no manner lessen the accumulation of blood in the vessels of the brain or produce an absorption of water from the Ventricles. I am induced to believe they will tend very much to aggravate the symptoms, rather than afford any relief. For as the least motion of the head must be detrimental to the Patient, I should not be disposed to recommend them.

Compression of the Carotids

This has been proposed by Patterson in order to obviate a morbid accession of blood to the vessels of

the head
-medy. Fi

this h
-phalus, b
it, w have
To what
-ted, wheth
action, or t
say, But th
Lastly a
-ced we ca
as are use
Tonics a
cases an
Dr Rush ha
a return of
of medicin
this remed

On c
be doing
acknowledg
the Professors
University.
your prosper
is so amply
your lives be
your ende
be crowned
have been

the head. We have no objection to a trial of this remedy. Fiat experimentum.

Digitalis

This has been suggested as a remedy in Hydrocephalus, but from the experience of those that have tried it, we have nothing to hope for as to its beneficial effects.

To what particular state of the disease it may be adapted, whether it might relieve by diminishing arterial action, or by its powers as a diuretic, I am not able to say, But think it a useless remedy at any time.

Lastly after the strength of the patient is much reduced we can do nothing more than give such remedies as are used in all other diseases proceeding from debility. Tonics and stimulants may be used cautiously in these cases and nourishing diet, gentle exercise in cool air &c. Dr Rush has suggested the use of the Cold Bath to prevent a return of the disease, where it has yielded to the power of medicine. No objection can be made to the use of this remedy.

On concluding this crude production, I should be doing injustice to my own feelings, were I to omit an acknowledgement of the many obligations I am under to the the Professors of the different branches of medicine in this University. Accept Gentlemen, my warmest wishes for your prosperity. May you always meet with the reward which is so amply and justly due to your merit; and may your lives be as happy as they have been useful, and may your endeavours to improve the science of medicine be crowned with as much honor to yourselves, as they have been beneficial to mankind.